PREPARATION AND REACTIONS OF ALIPHATIC NITRO COMPOUNDS CONTAINING AN INDOLE NUCLEUS

BY

JOHN PETER PELLEGRINI, JR.

B.S., Yale University, 1946
M.S., University of Illinois, 1947

AN ABSTRACT OF A THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
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Introduction

In recent years, a number of aliphatic nitro compounds have been alkylated by gramine or one of its salts (1,2). The compounds so obtained have been used as intermediates in syntheses of tryptophan, substituted tryptamines, and β-carbolines (1,2). In all of these studies, the nitro group has served as the precursor of an amino group, to which it was converted by catalytic reduction. The present work was undertaken to study the application of other reactions characteristic of aliphatic nitro compounds to the derivatives containing the β-indole group.

Discussion Of Results

The more important reactions characteristic of an aliphatic nitro group have been attempted on 1-(β-indole)-2-nitrobutane. Except for the formation of a sodium salt, this nitro compound has failed to undergo the reactions or has given mixtures which could not be separated.

N,N,N-Trimethyl-α-ethyltryptamine iodide was prepared by the action of methyl iodide on α-ethyltryptamine and has been submitted for pharmaceutical testing.

The Mannich base of 2-carbethoxyindole has been synthesized and its structure proven by conversion to *dl*-tryptophan (3).

2-Carbethoxygramine has been used to alkylate nitroethane, 1-nitropropane, and 2-nitropropane in yields of 20%, 63%, and 52%, respectively. In this way, 1-(α-carbethoxy-β-indole)-2-nitropropane, 1-(α-carbethoxy-β-indole)-2-nitrobutane, and 1-(α-carbethoxy-β-indole)-2-nitro-2-methylpropane

have been prepared.

When 1-(α-carbethoxy-β-indole)-2-nitrobutane or 1-(α-carbethoxy-β-indole)-2-nitro-2-methylpropane was subjected to catalytic reduction at room temperature, almost quantitative removal of the side-chain from the 3-position of the indole ring resulted.

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VITA

The author was born in New Haven, Connecticut, on January 23, 1926. He attended the public schools of New Haven, graduating from high school in June, 1943. In July, 1943, he entered Yale University, from which he received the degree of Bachelor of Science in Chemistry in 1946. In the fall of the same year, he entered the University of Illinois, from which he received the degree of Master of Science in Chemistry in 1947. From September, 1946, to June, 1947, he held a teaching appointment in the department of inorganic chemistry.

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